

**CLAIMS**

What is claimed is:

1. An assembly including at least one microprocessor, comprising:  
5                    means for recycling heat generated by at least one microprocessor to  
energy; and  
                  means for directing the heat from said at least one microprocessor to  
said means for recycling heat.
- 10            2. The assembly of claim 1, wherein said energy is used for cooling said at  
least one microprocessor.
3. The assembly of claim 1, wherein said energy is used to supply an electric  
power grid.
- 15            4. The assembly of claim 1, wherein said means for recycling heat comprises a  
heat engine.
5. The assembly of claim 4, wherein said heat engine comprises a Stirling heat  
20            engine.
6. The assembly of claim 4, wherein said heat engine comprises at least one  
of an Ericcson heat engine and a thermoacoustic heat engine.

7. The assembly of claim 1, wherein means for recycling heat comprises a thermoelectric circuit.

5 8. The assembly of claim 7, wherein said thermoelectric circuit comprises an array of thermocouples.

9. The assembly of claim 1, wherein said means for recycling heat comprises a chemical reaction.

10 10. The assembly of claim 1, wherein said means for directing the heat comprises at least one of means for conduction, means for convection and means for mass transport.

15 11. The assembly of claim 1, wherein said means for directing the heat comprises a solid piece of at least one of copper, silicon, aluminum, which is in thermal contact with said at least one microprocessor.

20 12. The assembly of claim 1, wherein said means for directing heat comprises at least one of a thermal paste, a silver epoxy, a Au-film, a liquid metal, and an oil.

13. The assembly of claim 11, wherein said solid piece comprises a portion of a heat sink, which is used to cool said at least one microprocessor.

14. The assembly of claim 1, wherein said means for directing the heat comprises a medium flowing from said at least one microprocessor to said means for recycling heat.

5        15. The assembly of claim 14, wherein said medium comprises one of a gas and a liquid.

16. The assembly of claim 15, wherein said gas comprises air.

10       17. The assembly of claim 15, wherein said liquid comprises water.

18. The assembly of claim 1, wherein said means for directing heat comprises a flow channel.

15       19. The assembly of claim 1, wherein said means for directing heat comprises at least one heat pipe.

20. The assembly of claim 5, wherein said heat engine comprises:

          a hot reservoir; and

20        a cold reservoir,

          wherein the heat from said at least one microprocessor is directed by the means for directing heat via a medium to the hot reservoir of the heat engine.

21. The assembly of claim 20, further comprising a cooling unit to cool said medium.

22. The assembly of claim 21, wherein the cooled medium cools the cold reservoir of the heat engine and said at least one microprocessor.

23. The assembly of claim 21, wherein said cooling unit comprises at least one of a refrigerator, a fan, and a heat exchanger.

24. A method for use with at least one microprocessor, comprising:  
directing heat away from said at least one microprocessor; and  
recycling the heat generated by said at least one microprocessor to energy.

25. The method of claim 24, wherein said energy is used for cooling said at least one microprocessor.

26. The method of claim 24, wherein said energy is used to supply an electric power grid.

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27. An assembly including at least one microprocessor, comprising:

a mechanism that recycles heat, generated by at least one microprocessor, to energy; and

a mechanism that directs heat from the at least one microprocessor, to the mechanism that recycles.